The NC Quality Center: Empowering Excellence in Health Care

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The NC Quality Center is transforming health care quality and patient safety in North Carolina by providing leadership, direction, and a vision to ensure that North Carolina delivers the best health care possible.

At the State Hospital Association Executives Forum in the summer of 2004, President of the North Carolina Hospital Association (NCHA) William Pully heard a talk by Donald M. Berwick, a leading authority on health care quality and improvement. Following this talk, Pully began to speculate about how the NCHA could increase its presence in driving health care transformation at the state level; at the urging of Mary L. Piepenbring, a vice president of The Duke Endowment, and with the support of the NCHA Board of Trustees, Pully soon submitted a grant application to establish the North Carolina Center for Hospital Quality and Patient Safety. Later that year, The Duke Endowment awarded the NCHA a 5-year grant, and the center was established.

In 2012, the center was renamed the NC Quality Center (NCQC) to reflect its growth beyond the hospital setting, and its mission was updated to reflect its efforts across the continuum of the health care delivery system. The mission of the NCQC is to partner with providers and communities in their efforts to provide safe, high-quality health care. To support health care providers and their communities in these efforts, the NCQC provides educational and collaborative programs as well as analyses of quality of care and patient safety data.

Foundational Elements

The NCQC initially focused its activities on the Institute for Healthcare Improvement’s 100,000 Lives Campaign. However, the center wanted to do more to assist organizations in their efforts to improve quality of care and patient safety at a systems level. Taking into account lessons learned by leaders in the military and in high-risk industries such as aviation and nuclear power, the NCQC established the foundational elements for a highly reliable health care organization (Figure 1). The NCQC recommends that hospitals strive to develop a strong safety infrastructure by incorporating these elements: teamwork and communication, a fair and just culture, reliable processes, proactive assessment of risk, and continuous organizational learning. These elements become the cornerstones of patient safety and quality of care, and they serve as the glue that makes new best practices successful and sustainable. The NCQC has established specific educational and collaborative programs for each element, developed a team of well-educated trainers, built tools and data systems to assist hospitals, and infused the foundational elements into all of the programs led by the NCQC. In addition, the NCQC’s leaders promote trust and transparency of information as key attributes of a culture of patient safety.

An example of a program devoted to one of these foundational elements is the NCQC’s Just Culture collaborative program, which began in 2006. This collaborative program focuses on promoting a safety culture that is fair and just, yet accountable [1]. This 2-year collaborative program is based on the Just Culture model developed by David Marx and promoted by the company Outcome Engenuity. To date, 3 Just Culture collaborative programs have concluded, and 2 programs are currently in progress. To measure the internal culture of the hospitals that are part of the collaborative, staff members of each participating hospital take the Agency for Healthcare Research and Quality’s Hospital Survey on Patient Safety Culture at the beginning of the program and again at the end of the program. The results of the 2010 Just Culture collaborative program show improvement in 8 of the 12 survey dimensions (Figure 2). For 2 highly relevant dimensions—nonpunitive response to error and communication openness—the proportion of respondents who viewed the dimension positively increased by 5%. In comparison, national trends showed increases of only 1% and 0.5% in these 2 dimensions, respectively, between 2010 and 2011 [2].

Current Initiatives

The NCQC initially aligned its priorities and goals with those set by the National Priorities Partnership. In response to the Affordable Care Act, the US Department of Health
and Human Services (DHHS), in partnership with key stakeholders (including the National Priorities Partnership), released the National Strategy for Quality Improvement in Health Care [3]. This strategy, a national blueprint for all health care stakeholders across the nation, prioritizes quality improvement efforts, harmonizes the efforts of the stakeholders, and outlines a measurement strategy for collective success. The majority of the NCQC’s work is aligned with the first of 6 priorities outlined in this national strategy: making care safer by reducing harm caused in the delivery of care.

At the national level, many organizations are collaborating and partnering to affect the goals of the National Strategy for Quality Improvement in Health Care. Tasked by DHHS, the Centers for Medicare & Medicaid Services (CMS) is leading the national Partnership for Patients initiative to reduce patient harm. This initiative established hospital engagement networks to identify best practices for reducing the incidence of hospital-acquired conditions, to diffuse and teach those best practices to hospitals, and to assist hospitals with the implementation of new strategies. The NCQC is leading 1 of the 27 regional hospital engagement networks in partnership with the Virginia Hospital and Healthcare Association. Through this national initiative, the NCQC is providing collaborative learning networks on adverse drug events, catheter-associated urinary tract infections, central line–associated bloodstream infections, injuries from falls and immobility, obstetric adverse events, pressure ulcers, surgical site infections, venous thromboembolisms, ventilator-associated pneumonia, and preventable readmissions.

The workhorse of the NCQC programs is the collaborative based on the Institute for Healthcare Improvement’s Collaborative Model for Achieving Breakthrough Improvement [4]. When staff members from the hospitals participating in a collaborative meet, either in person or through webinars, they have an opportunity for true collaboration and shared learning; they can describe their quality-improvement goals, compare their outcome measures, and openly discuss their struggles and the barriers they face. In addition to the Just Culture program, other collaborative programs offered by the NCQC focus on preventing health care–associated infections; reducing avoidable readmissions; improving maternity care; and providing reliable core processes of care—processes that have been established as being central to good outcomes and that are used at the right time for every applicable patient.

In 2008, the NCQC was proud to be the first organization in North Carolina to be certified as an official federal Patient Safety Organization (PSO) by the Secretary of DHHS. This designation allows health care organizations to confidentially report information about serious patient safety events to the NCQC and ensures that this information is protected from legal discovery. PSOs were established as part of the

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**FIGURE 1.**
The NC Quality Center’s Foundational Elements for a Highly Reliable Health Care Organization

1. Optimizing teamwork and communication within health care.
2. Promoting a safety culture that is fair and just, yet accountable.
3. Designing reliable processes and systems by applying Lean principles, taking human factors into account, and relying on evidence-based science.
4. Learning from unwanted events that occur and implementing changes to reduce the risk of them happening again.
5. Creating an environment that encourages continuous learning.
Patient Safety and Quality Improvement Act of 2005 [5] to encourage facilities to investigate the root causes of an adverse event through a standardized reporting process that allows for organization learning, prevention strategies, and feedback.

One of the keys to the success of the NCQC’s programs is that the center partners with similar organizations, such as The Carolinas Center for Medical Excellence and the North Carolina Department of Public Health, in order to optimize resources, reduce duplication of efforts, and offer a single initiative to the health care community. The NC 39 Weeks Campaign is a new and wonderful partnership that includes the NCQC, the March of Dimes Foundation, the Perinatal Quality Collaborative of North Carolina, Community Care of North Carolina’s Pregnancy Medical Home, the television station FOX50, and the radio station MIX 101.5 WRAL-FM. The goal of the statewide partnership is to prevent a scheduled elective delivery before a pregnancy reaches full term.

Commitment to Transparency and Measurement

The NCQC promotes the open sharing of hospital performance measures for the purposes of improvement, accountability, and learning. Studies show that comparative hospital quality reports intensify hospital quality improvement efforts, improve an organizational culture in ways that promote quality of care and patient safety, and positively influence hospital operations by placing higher priority on quality of performance [6, 7]. Therefore, as an immediate goal in 2006, the NCQC launched www.NCHospitalQuality.org, a public Web site that reports and compares hospital-level quality performance scores for nonfederal acute-care hospitals in North Carolina. In addition to providing consumers with standardized and reliable information about quality of care, the site’s objective has been to provide performance benchmarks that will assist and stimulate hospitals’ efforts to continuously improve their quality of care.

Beginning in July 2007, the NCQC began publicly reporting hospital-specific scores for a measure called “optimal care.” Hospitals receive separate optimal care scores for 4 different health conditions: heart attack, heart failure, pneumonia, and surgery. The optimal care measure employs an all-or-none methodology to determine whether a patient with 1 of the 4 conditions received all of the recommended treatments for which he or she was eligible. This methodology supports the notion that achieving a desired clinical outcome requires the completion of a full set of tasks; thus, it puts an emphasis on system-wide implementation of reliable processes of care that require teamwork, communication, and involvement from all levels of staff.

Before the optimal care scores were introduced, the Web site was reporting condition-level summary scores that were aggregates of the individual scores. In comparison, the optimal care scores have been lower as a result of this method’s more stringent and sensitive scoring. Use of these scores therefore raises the bar for performance and increases their ability to improve outcomes [8]. The optimal care scores were not public measures, so with the backing of the NCHA Board of Trustees and the NCQC Board, the NCQC set out to get consent from each hospital to allow The Carolinas Center for Medical Excellence to calculate these scores and

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**FIGURE 2.** Percentage of Positive Responses on the Agency for Healthcare Research and Quality’s Hospital Survey on Patient Safety Culture, Measured Before and After Participation in the 2010 Just Culture Collaborative Program of the NC Quality Center

- Teamwork within units
- Manager promotes safety
- Senior management support
- Organizational learning
- Frequency of events reported
- Feedback and communication
- Overall perceptions of safety
- Communication openness
- Staffing
- Teamwork across hospital units
- Nonpunitive response to error
- Hospital handoffs and transitions

30% 35% 40% 45% 50% 55% 60% 65% 70% 75% 80%

- Percentage of responses to the dimension that were positive at the beginning of the program in January 2011.
- Percentage of responses to the dimension that were positive at the end of the program in September 2012.
Project to Prevent Central Line-Associated Bloodstream Infections in the Medical Intensive Care Unit

David Avalos, Deirdre Lemon

In an attempt to reduce the rate of central line-associated bloodstream infection (CLABSI) in its medical intensive care unit (ICU), Gaston Memorial Hospital in 2009 joined the NC Prevent CLABSI Collaborative that had been formed by the North Carolina Center for Hospital Quality and Patient Safety (now known as the NC Quality Center). Our team was comprised of nursing managers, clinical nurse specialists, infection preventionists, risk managers, ICU staff nurses, and members of the IV team. At this time, we did not focus on the Comprehensive Unit-based Safety Program recommended by the collaborative. Instead, we focused on house-wide initiatives, such as hand hygiene campaigns and “scrub the hub” campaigns, and we also initiated multidisciplinary patient care rounds. Although we did see some reductions in CLABSI rates, those lower rates were not sustainable.

When we decided to participate in the continuation of the NC Prevent CLABSI Collaborative that began in August 2011, we knew that we had to make some changes. Therefore the Comprehensive Unit-based Safety Program was adopted in 2011 and was utilized during the second phase of the collaborative. We knew that staff buy-in was a key factor and that staff members had to own this project in order for it to succeed. We created a Medical ICU Performance Improvement Project focused on CLABSI rate reduction. Medical ICU staff members were encouraged to participate in team meetings, and their input was viewed as essential.

Medical ICU CLABSI rates were posted monthly and were discussed at every unit meeting so that staff members were made aware of their progress. Whenever a CLABSI was identified, staff members were asked to participate in a defect analysis, which helped them to take ownership of the situation and to hold one another accountable. Members of the staff began to engage in conversations and to explore additional opportunities for improvement. They began reporting concerns about other areas of the hospital where practices differed from those followed in the medical ICU. Their feedback was instrumental in helping to identify the need to implement our nursing strategies in other departments, such as respiratory therapy, anesthesia, and radiology, and to impart those strategies to laboratory personnel and any other health care workers who accessed the vascular system.

Staff members created a central line maintenance bundle, which was used as a teaching tool and in competency check-offs. “Super users” were trained in aseptic technique and blood culture collection. The super users then trained their peers and performed competency checks. The maintenance bundle checklist was also used as an audit tool to track compliance. This tool was later reformatted and is currently used hospital-wide as a competency check-off.

The strategies and outcomes discussed in the NC Prevent CLABSI Collaborative were also a standing agenda item for our Vascular Access Safety Team Committee. We post them on a public Web site. The chief executive officer of each NCHA hospital effectively consented to the public posting of the hospital’s report card, knowing that these scores would be displayed alongside those of the hospital’s peers and could look less favorable than what was previously displayed.

Because the NCQC is, in a sense, a “department” of the NCHA, the center is challenged by the NCHA Board of Trustees to raise the bar and to move faster. For example, since 2006, the state’s average score for each of the 4 optimal care conditions has shown a steady upward improvement. Yet, in 2010, the NCHA Board wanted to be sure that the low performers were not being left behind. This concern resulted in the addition of the Hospital Quality Dashboard to the performance report Web site. The dashboard clearly shows which hospitals are in the top and bottom quartiles for each of the 4 optimal care conditions, as well as showing the 30-day mortality rates for 3 conditions, the 30-day readmission rates for 3 conditions, and 2 dimensions of the patient perception of care survey. The dashboard design is also used to measure the NCQC itself by setting internal organizational goals (such as measuring levels of hospital participation in programs and hospital participation in surveillance of hospital-acquired infections) and setting targets for quality and patient safety that continuously push for greater improvement.

Challenges

The health care patient safety and quality improvement community continues to struggle with the lack of real-time data and the need for reliable methods of measurement that allow for quick provider feedback and reveal trends in patient safety [9]. While claims data can be used for some measurements, this source has several limitations, including incomplete information, the need to account for changes in coding and definitions, and the fact that claims databases lag at least 6 months behind the actual provision of care. Collection strategies have been used for the past 10 years or longer that require the review of individual patient charts or the reporting of complications and adverse events by providers. This approach is time-consuming and expensive, and it often results in sample sizes that are too small to result in reliable measurements. Therefore, the NCQC provides measurement services to hospitals that facilitate the creation
of larger sample sizes to better understand the impact of quality improvement interventions and to prioritize areas for improvement.

Moving Forward

With health reform and the need for more efficient, high-quality care come new challenges for the NCQC and for North Carolina’s health care providers. Hospitals and physician clinics must be “meaningful users” of certified electronic health records technology by 2014 or they will face negative Medicare payment adjustments in 2015. Hospitals and physicians are also facing new pay-for-performance programs that require very tedious data collection and measurement. Furthermore, the Affordable Care Act includes a new program to reduce payments for hospitals with worse-than-expected readmission rates. This change should result in new community partnerships and better postdischarge communication aimed at improving the transition of care after a patient’s hospitalization.

With new competing priorities, the workload of hospital staff is increasing at a pace that exceeds resources and training. Real or perceived staffing deficiencies can put a patient at risk for a health care–acquired complication or an adverse event; however, a strong safety climate (which is one of the NCQC’s foundational elements) can ameliorate the stress levels of those who work with high-risk patients [10]. Therefore, the NCQC will continue to educate and lead organizations as they build a strong culture of patient safety that instills fairness and accountability.

The NCQC and the NCHA embrace the opportunity to offer their leadership and vision to all of North Carolina’s health care providers as they tackle new challenges with a dedication to better teamwork across all health care settings and to patient-centered, high-quality care.

Acknowledgment

Potential conflicts of interest. C.K. and J.C. have no relevant conflicts of interest.

References

Eliminating Early Elective Deliveries at New Hanover Regional Medical Center

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In the fall of 2009, New Hanover Regional Medical Center (NHRMC) joined the Perinatal Quality Collaborative of North Carolina’s project to eliminate elective deliveries before 39 weeks of gestation. NHRMC’s stated aim was to decrease the proportion of births before 39 weeks of gestation that are elective to 5% or less, and to accomplish this goal by September 30, 2010. The baseline data for NHRMC indicated that 28% of deliveries that took place between 37 weeks and 38 weeks plus 6 days of gestation were not medically indicated. Most of these early elective deliveries were scheduled cesarean sections.

A 3-pronged approach was implemented to meet this aim. First, the department of obstetrics and gynecology adopted the reduction of elective deliveries to 5% as its quality goal for 2009-2010. Physicians agreed not to induce labor or schedule a cesarean section at a gestational age of less than 39 weeks without a medical indication. Hospital administrators also agreed to facilitate this goal. Second, education focusing on current evidence regarding the advantages of not delivering before 39 weeks of gestation was provided to nursing staff and other providers who care for pregnant women. This information was presented at department and staff meetings, sent via email, and reviewed during a visit to each obstetrics and gynecology group. Third, the process for scheduling inductions was changed. Inductions had previously been scheduled by health unit clerks, but this function was shifted to the registered nurse clinical coordinators for labor and delivery, who did not schedule any delivery requested prior to 39 weeks of gestation unless it was medically necessary. Examples of conditions that might necessitate a delivery before 39 weeks of gestation include preeclampsia, uncontrolled diabetes, intrauterine growth restriction, nonreassuring fetal tracing, placenta previa with bleeding, fetal demise, chorioamnionitis, and placental abruption. If a clinical coordinator was unsure about the medical necessity of an indication for induction, he or she could contact the manager for labor and delivery or the medical director of obstetrics.

The Obstetrics Safety Team (a multidisciplinary quality team) completed retrospective chart reviews of all scheduled deliveries between 37 weeks and 38 weeks plus 6 days of gestation to ensure that they were medically indicated. The chart was required to contain not only the indication for the delivery, but also the supporting data for the indication. For example, the chart could not simply state that oligohydramnios was the indication; it also had to include the specific amniotic fluid index level. If any patient was found to have delivered prior to 39 weeks of gestation without a medical indication, the admitting physician would be contacted; if, after review, there was no medical indication for the delivery, the provider would be counseled by the medical director of obstetrics. This personal communication between the medical director and her colleagues was essential for success.

In the department of obstetrics, results of the chart reviews were shared at all meetings of the medical staff, the nursing unit, and the Unit Practice Council. Graphs of results were posted on all units. Finally, staff members maintained a running total for the number of days that had passed since the last elective delivery. NHRMC celebrated its 1-year mark on March 24, 2012. In terms of the proportion of elective deliveries that occurred before 39 weeks of gestation, this rate was 6% in September 2010, 2% in September 2011, and 0% in September 2012.

Of course, there were challenges. Although the department voted to restrict elective deliveries before 39 weeks, not all members of the department were in attendance at that meeting. It took time to achieve buy-in from everyone. Patients admitted through the obstetric triage department did not always meet the criteria for a medically indicated delivery. Also, the criteria for accepted medical indications were initially not well defined, but this situation improved with the publication in August 2011 of an article synthesizing the available information regarding the conditions that can result in late preterm and early term births and specifying the optimal timing of delivery for specific conditions [1].

Success continues today as the department looks forward to celebrating 2 years without an elective delivery prior to 39 weeks of gestation; we hope to achieve this milestone on March 24, 2013. NCMJ

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Acknowledgment
Potential conflicts of interest. All authors have no conflicts of interest.

Reference


